aLIGO ISC optics: 1" and 2" 95% beam splitters

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
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1 Description

1" Ø and 2" Ø 95% beam splitters @ 1064nm

2 Material

Corning HPFS 7980 (high purity fused silica, UV grade)
Grade 0A (Low inclusion class: <0.3 mm^2 cross section, 0.1 mm max. size;
Homogeneity < 1ppm)

3 Dimensions, Surface Roughness and Figure

E1000871-v1-01

1"Ø +.000/-.005" X .250" ± .020" tk., Plano / Plano
Wedge: 30 arc minutes ± 5 arc minutes
Surface Roughness:

Side 1
Super polish
Surface Roughness: <1Å RMS in CA
Surface Quality: 10-5
Side 2
Commercial Polish
Surface Roughness: <5Å RMS in CA
Surface Quality: 20-10

Surface Figure:

Side 1
Flat < λ/10 at 632.8 over central 80%
Side 2
Flat < λ/4 at 632.8 over central 80%

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E1000871-v1-02

2"Ø +.000/-.005" X .375" ± .020" tk., Plano / Plano
Wedge: 30 arc minutes ± 5 arc minutes
Surface Roughness:

Side 1
Super polish
Surface Roughness: <1Å RMS in CA
Surface Quality: 10-5
Side 2
Super Polish
Surface Roughness: <1Å RMS in CA
Surface Quality: 20-10

Surface Figure:

Side 1
Flat < λ/10 at 632.8 over central 80%
Side 2
Flat < λ/5 at 632.8 over central 80%

4 Coating

Wavelength: 1064nm
Angle of incidence: 45°
Side 1
R=95% ± 0.5% for **p** polarization
Side 2
AR coating, R < 0.1% (best effort) for **p-**polarization

Arrow pointing to side 1, serial numbers and registration marks shall be scribed or etched on the barrel of the optic for in-vacuum use.

Coating vendor to provide:

1. Two spectrophotometer graphs of the reflectance and transmittance of the HR coatings; one covering the spectrum from 530nm to 1200nm; the other, with increased sensitivity, showing wavelengths from 900nm to 1100nm
2. Spectrophotometer graphs of the reflectance of the AR coating taken as cited above.